

**Amendments to the Specification:**

Please replace paragraph [0038] with the following amended paragraph:

[0038] The first fold mirror **406** receives light from the secondary mirror and is tilted to reflect the light to a second fold mirror **408**. The second fold mirror **408** is configured to receive the light from the first fold mirror **406** at an incidence angle of zero degrees. Because of the zero-degree incidence angle, the second fold mirror **408** reflects the light back in the direction of the first fold mirror **406**. Due to the focusing effect of the primary and secondary mirrors **402** and **404**, the light returning to the ~~primary~~ first fold mirror **406** converges and occupies a smaller area than when it first left that mirror 406. ~~and as~~ As a result of this focusing effect, the returning light ~~is able to pass~~ passes through the hole in the ~~primary~~ first fold mirror **406**.

Please replace paragraph [0039] with the following amended paragraph:

[0039] The light that returns from the second fold mirror **408** ~~is directed~~ directs light and passes through the hole in the first fold mirror **406** ~~and also passes through a hole in the~~ primary mirror **402**. The light passing through the hole in the primary mirror 402 is received by ~~to~~ a beamsplitter **410** that splits the incoming light into two output channels (one channel is omitted for clarity). A field corrector **412** may be used with each output channel of the beamsplitter to improve field characteristics at a detector **413**, which may be a suitable focal plane array (FPA).

Please replace paragraph [0048] with the following amended paragraph:

[0048] ~~Due to the focusing effect of the~~ The primary and secondary mirrors **402** and **404** ~~[[,]]~~ focus the light so that when reflected from the second fold mirror back to the light returning to the primary fold mirror **406** the light converges and occupies a smaller area. ~~and as~~ As a result the returning light passes ~~is able to pass~~ through the holes in the first fold mirror **406** and primary

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mirror **402**. The light passing through the first fold mirror **406** from the second fold mirror **408** is then received by the beamsplitter **410**. The beamsplitter **410** then directs the light to the field corrector **412**.

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of the claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): An imaging system adapted to fit within a spherical housing, said imaging system comprising:

    a primary mirror, wherein said primary mirror has a diameter that is smaller than an interior diameter of said spherical housing;

    a secondary mirror configured to receive ~~received~~ light reflected from said primary mirror;

    a first fold mirror configured to receive light from said secondary mirror; ~~and~~

    a second fold mirror configured to receive light from said first fold mirror; and[[,]]

a beamsplitter configured to receive light from said second fold mirror, wherein said imaging system is operable to focus a field of view (FOV) is ~~imaged~~ within said spherical housing.

Claim 2 (original): The imaging system of Claim 1, wherein said primary mirror is concave.

Claim 3 (original): The imaging system of Claim 2, wherein said primary mirror is parabolic.

Claim 4 (original): The imaging system of Claim 2, wherein said primary mirror is hyperbolic.

Claim 5 (original): The imaging system of Claim 2, wherein said primary mirror is elliptical.

Claim 6 (original): The imaging system of Claim 2, wherein said primary mirror is spherical.

Claim 7 (original): The imaging system of Claim 1, wherein said secondary mirror is convex.

Claim 8 (original): The imaging system of Claim 7, wherein said secondary mirror is parabolic.

Claim 9 (original): The imaging system of Claim 7, wherein said secondary mirror is hyperbolic.

Claim 10 (original): The imaging system of Claim 7, wherein said secondary mirror is elliptical.

Claim 11 (original): The imaging system of Claim 7, wherein said secondary mirror is spherical.

Claim 12 (canceled)

Claim 13 (currently amended): The imaging system of Claim 1, wherein said beamsplitter is a cube beamsplitter.

Claim 14 (currently amended): The imaging system of Claim 13, wherein said beamsplitter comprises correction structures formed in surfaces thereof.

Claim 15 (currently amended): The imaging system of Claim 1, further comprising a first field corrector.

Claim 16 (currently amended): The imaging system of Claim 1, further comprising a first detector configured to receive light from said beam splitter and operable to detect a first range of wavelengths.

Claim 17 (currently amended): The imaging system of Claim 1[[12]], further comprising a second detector configured to receive light from said beam splitter and operable to detect a second range of wavelengths.

Claim 18 (currently amended): The imaging system of Claim 1[[12]], further comprising a second beamsplitter configured and operable to receive light from said beam splitter.

Claim 19 (original): The imaging system of Claim 1, wherein said second fold mirror is transparent to a desired infrared wavelength.

Claim 20 (original): The imaging system of Claim 19, further comprising a first infrared detector positioned within said sphere to receive infrared light through said second fold mirror.

Claim 21 (original): The imaging system of Claim 20, wherein said first infrared detector further includes a focal plane array.

Claim 22 (currently amended): The imaging system of Claim 15[[1]], further comprising a second field corrector.

Claim 23 (currently amended): The imaging system of Claim 15[[22]], wherein said system is operable to produce a an image at said first detector is substantially diffraction-limited image at said first detector.

Claim 24 (original): The imaging system of Claim 1, wherein said system has a f-number of between about  $f/3$  to about  $f/8$ .

Claim 25 (original): The imaging system of Claim 24, wherein said system has a f-number of about  $f/4$ .

Claim 26 (original): The imaging system of Claim 24, wherein said system has a f-number of about  $f/6.43$ .

Claim 27 (currently amended): The imaging system of Claim 1, wherein a ratio of said diameter of said primary mirror to a diameter of said spherical housing ball is about  $11/20$ .

Claim 28 (currently amended): The imaging system of Claim 1, wherein a ratio of said diameter of said primary mirror to a diameter of said spherical housing ball is about  $7/10$ .

Claim 29 (currently amended): The imaging system of Claim 1, wherein a ratio of said diameter of said primary mirror to a diameter of said spherical housing ball is about  $9/10$ .

Claim 30 (original): The imaging system of Claim 20, further comprising a MWIR or LWIR camera having a FPA, a dewar, and a cold stop.

Claim 31 (original): The imaging system of Claim 30, further comprising a cold shield operable to image said FPA on said cold stop.

Claim 32 (currently amended): The imaging system of Claim 31, wherein said cold shield further comprises ~~comprising~~ a reflective coating.

Claim 33 (original): The imaging system of Claim 32, wherein said reflective coating includes a centrally transmissive region.

Claim 34 (currently amended): The imaging system of Claim 1, further comprising a wide field of view (WFOV) acquisition camera disposed within a central obscuration of said secondary mirror within said spherical housing.

Claim 35 (currently amended): The imaging system of Claim 1, further comprising An  
~~illumination and detection system adapted to fit within a sphere, said system comprising:~~  
~~—— a spherically enclosed folded imaging system having primary and secondary mirrors and~~  
~~two or more fold mirrors; and~~  
a first laser illumination system disposed in said spherical housing.

Claim 36 (currently amended): The imaging ~~illumination and detection~~ system of Claim 35,  
wherein said first laser illumination system is operable to produce an output with a first range of  
wavelengths.

Claim 37 (currently amended): The imaging ~~illumination and detection~~ system of Claim 36,  
wherein said first range of wavelengths is centered at about 1 micron.

Claim 38 (currently amended): The imaging ~~illumination and detection~~ system of Claim 36,  
wherein said first range of wavelengths is centered at about 1.5 microns.

Claim 39 (original): The imaging system of Claim 35, wherein said spherically-enclosed folded  
imaging system further comprises a MWIR or LWIR channel.

Claim 40 (original): The imaging system of Claim 39, wherein said MWIR or LWIR channel  
includes a MWIR or LWIR camera.

Claim 41 (currently amended): The imaging system of Claim 40, wherein said ~~MWIR or LWIR~~  
camera includes a dewar, a focal plane array (FPA), and a cold shield.

Claim 42 (original): A method of constructing a spherically-enclosed folded imaging system  
having a wide diffraction-limited field of view comprising the steps of:

placing primary and mirrors inside a spherical housing;  
placing at two or more fold mirrors inside the spherical housing;  
placing a beamsplitter in the spherical housing to receive an input from a last fold mirror of said two or more fold mirrors; and  
placing two or more field correctors in the spherical housing.

Claim 43 (original): The method of Claim 42, further comprising the step of placing a detector or a camera in said spherical housing to receive an image from one or said two or more field correctors.

Claim 44 (original): The method of Claim 42, wherein said step of placing a beamsplitter in said spherical housing further comprises placing a cube beamsplitter having correction structures.

Claim 45 (original): The method of Claim 42, wherein said step of placing primary and secondary mirrors inside a spherical housing comprises placing hyperbolic primary and secondary mirrors in said spherical housing.

Claim 46 (new): The imaging system of Claim 37, wherein said first range of wavelengths is centered at 1 micron.

Claim 47 (new): The imaging system of Claim 38, wherein said first range of wavelengths is centered at 1.5 microns.

Claim 48 (new): The imaging system of Claim 16, wherein said first detector includes a focal plane array.

Claim 49 (new): The imaging system of Claim 17, wherein said second detector includes a focal plane array.



Claim 50 (new): The imaging system of Claim 1, wherein said first fold mirror includes a hole disposed there through, wherein said first fold mirror is operable to allow the passage of light received from said second fold mirror.

Claim 51 (new): The imaging system of Claim 1, wherein said primary mirror includes a hole disposed there through, wherein a portion of said first fold mirror is disposed in said hole of said primary mirror.

Claim 52 (new): The imaging system of Claim 1, wherein said primary mirror includes a hole disposed there through, wherein said primary mirror is operable to allow the passage of light received from said second fold mirror.

Claim 53 (new): The imaging system of Claim 1, further comprising a spherical housing surrounding said primary mirror, said secondary mirror, said first fold mirror, said second fold mirror, and said beam splitter, wherein said spherical housing includes an aperture to admit light to said primary mirror.

Claim 54 (new): An imaging system adapted to fit within an aspherical housing, said imaging system comprising:

- an aspherical housing having an aperture for admitting light;
- a primary mirror within said housing, wherein said primary mirror has a diameter that is smaller than an interior axis of said aspherical housing;
- a secondary mirror within said housing and configured to receive light reflected from said primary mirror;
- a first fold mirror within said housing and configured to receive light from said secondary mirror;

a second fold mirror within said housing configured to receive light from said first fold mirror; and

a beamsplitter within said housing and configured to receive light from said second fold mirror, wherein said imaging system is operable to focus a field of view (FOV) within said aspherical housing.

Claim 55 (new): The imaging system of Claim 51, wherein said housing is an ellipsoid or a spheroid